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"Japan's Dependence on Imports of Iron Ore"

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This study has been pursued as partial basis for a projected estimate of Japan's vulnerability to political and economic pressures from Communist Asia as a consequence of its steel industry requirements.

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Japan's Dependence on Imports of Iron Ore

Problem: Japan has inadequate resources of iron ore, a basic material in the manufacture of steel. Accordingly, it has to rely on imports to meet its requirements. This study aims to analyze the extent to which Japan depends upon foreign sources and to identify these sources with a view to determining the extent to which Japan may rely upon; (a) non-Communist areas of the Far East, and (b) Communist areas of the Far East.

Assumptions:

Of the Far Eastern countries which have proven reserves of iron ore, the following political orientation for an indefinite period can be expected:

1. These countries will be pro-US: the Philippines, India and Australia.
2. These countries will be mixed in sentiment with at least important segments pro-US: Malaya and Indo-China.
3. These countries will be pro-USSR: Manchuria, China (including Hainan Island) and northern Korea. (Throughout this paper, consideration of Manchuria is made distinct from that of the rest of China.)

Conclusions:

On the basis of SCAP's estimate that the Japanese iron and steel industry will require in 1953 iron ore in the amount of 4.85 million metric tons:

1. The iron ore requirements of Japan potentially can be met by producers in the Far East which are not Communist-oriented.
2. The iron ore requirements of Japan potentially can be met by producers in the Far East which are Communist-oriented.
3. If Japan were to become Communist-oriented, it would be difficult for the US to deny Japan its iron ore requirements.

Discussion:

Japan has small reserves of iron ore in relation to its needs and capacity for producing iron and steel. Most of its iron ore is low-grade. Japan's reserves are estimated at about 8½ million metric tons. 1/ The Japanese may be able to reach and maintain a maximum annual domestic production of 1,500,000 tons of iron ore and iron sand concentrates combined, averaging from 40 to 50 percent iron, for six to nine years in the future. (About 550,000 - 600,000 tons pig iron). At that rate, all known mines would be exhausted within that period.

Japan's iron ore requirements in 1949 were estimated by SCAP at 1.85 million metric tons rising to 4.85 million metric tons in 1953 (not including small quantities of pyrite cinder). Domestic production is estimated at 0.84 million metric tons in 1949, rising to a peak of 1.30 million metric tons 1950, and declining to 1 million metric tons in 1953. Imported ore requirements are estimated at 1.01 million metric tons in 1949 rising to a peak of 3.85 million metric tons in 1953.

Accordingly, as in the past, Japan must rely on imports for the greater part of its iron ore. During the twenty year period from 1925 through 1945, imported ores constituted 74 percent and domestic ores 26 percent of the total consumed by the iron and steel industry. Before 1939, domestic ores comprised 13 percent of the total available and imported ores 87 percent, but from that year to the end of World War II, due to war factors, domestic ores comprised about 37 percent and imported ores about 63 percent of the total available.

1/ Obviously, most of the estimates of reserves are at best only approximate, and show considerable variance, according to source.

During the period 1925-1941, Malaya and China were the chief suppliers of Japan's iron ore (except that in 1937-39, the period of greatest effectiveness of China's boycott of Japanese goods, imports from China declined markedly). Other sources included Korea, Manchuria, the Philippines, Indo-China, India, Australia, Canada and the US. During the war period, December 1941-1944, China was the major supplier of Japan's imports, Korea being the only other source of any significance.

Because of its shortages of coking coal and iron ore, Japan relied heavily in the prewar period on scrap instead of pig iron for making steel. In the prewar period, Japan was the world's largest importer of iron and steel scrap. Scrap formed about 50 percent of the iron needs in steel making and in turn about 50 percent of the scrap was imported. The United States was the principal supplier of iron and steel scrap to Japan.

The SCAP estimates assume that the ratio between scrap and pig will be about 60:40 in 1949 but by 1953 will decline to 40:60. Manifestly, to the extent that Japan can procure scrap from its domestic sources its dependence on iron ore imports lessens. It is doubtful that Japan will be able to import scrap for some time to come (because of political hostility and because of the probability that scrap will continue to be in relatively shorter supply in world markets in the period 1949-1953 than either iron ore or pig iron) nor do the SCAP projections anticipate any. In addition, SCAP hopes that as of 1953 Japan can import 200,000 tons of its 3.15 million tons of pig iron requirements. Obviously, to the extent that Japan can procure additional scrap or pig iron, its iron ore needs would be decreased.

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TABLE

Iron-ore imports to Japan proper, by source, fiscal years 1931-45
(Expressed as percentage of total imports)

Year and Quarter	Korea		Manchuria		China 1/		Philippines		Malaya		Other		Total	
	%	%Fe	%	%Fe	%	%Fe	%	%Fe	%	%Fe	%	%Fe	Amt. 2/	%
1931	10	na	...	...	35	na	...	...	53	na	2	na	1,727	100
1932	9	na	...	...	34	na	...	...	54	na	3	na	1,634	100
1933	14	na	...	...	32	na	...	...	52	na	2	na	1,779	100
1934	8	na	...	...	36	na	...	...	38	na	18	na	2,312	100
1935	7	50	...	...	35	60	8	na	40	63	10	57	3,646	100
1936	6	50	...	...	31	60	14	na	42	63	7	57	4,023	100
1937	7	50	...	...	14	60	13	na	38	63	28	57	4,313	100
1938	11	50	...	...	5	60	...	...	50	63	34	57	3,212	100
1939	8	50	...	...	14	60	13	na	39	63	26	57	4,949	100
1940	8	50	1	60	20	60	21	na	36	63	14	57	5,719	100
1941	15	50	1	60	50	61	9	na	23	63	2	59	5,058	100
1942	13	51	1	60	82	61	1	60	2	63	1	59	4,880	100
1943	7	51	...	...	88	59	4	60	1	63	...	...	3,686	100
1944	37	54	1	59	61	58	1	60	...	...	...	...	1,668	100
1945	87	54	3	na	10	na	...	...	...	...	...	...	143	100

na/ - Indicates data not available.
1/ - Includes Hainan Island
2/ - In thousands of metric tons.

Source: United States Strategic Bombing Survey, Coals and metals in Japan's war economy quoting as its source -- date supplied by Japan Iron & Steel Control Association (TEKKO TOSEI KAI), November 1945.

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War Experience:

During the war, Japan found its shortage of general-use coal and coking coal was the real limiting factor in its iron and steel industry rather than shortage of iron ore. Blockade by the US retarded the efficiency of Japanese production but the Japanese were able to carry on a limited effort by (a) expanding domestic production, (b) expanding Korean production, and (c) developing China as a source, mainly the Yangtze Valley and Hainan.

Probable iron ore sources for the future

A. Far East non-Communist areas

Malaya

Malaya has estimated reserves of 66 million tons with iron (Fe) content of 55 and 66 percent. The producing deposits are located near the coast. Cheapness of water transportation made shipment to Japan feasible before the war when Japan took about the entire production. At present, only the Bukit Besi Mine is being worked, located 18 miles from the port at Kuala Dungun with which it is connected by a narrow gauge railroad. This mine had a stockpile in the beginning of 1949 of about 450,000 tons, which averaged between 58% and 60% Fe, with a very low sulphur and phosphorous content. The mine is scheduled to ship 600,000 - 1,000,000 tons during 1949, all to Japan. (Not all of the stockpile will be exhausted in 1949 so as to retain a cushion against suspension of mining operation). More conservatively, SCAP hopes that Japan can procure from Malaya 400,000 tons in 1949 rising to 1,500,000 tons in 1953.

Philippines

The Philippines have estimated reserves (over 60% Fe) of 12.3 million tons, and (47% Fe) 500 million - 1 billion tons. Production is almost entirely derived from scattered, small, open-pit operations located close to the coast where the ore can be easily loaded on ships. Before the war almost the entire Philippine production went to Japan.

The Atlantic Gulf and Pacific Company, owner of the Philippine Iron Mines, has contracted to export 200,000 tons of ore to Japan with initial shipments planned from a stockpile of 120,000 tons of ore mined by the company during the war. Japanese structural steel products are to be made available to the Philippines to compensate for the reduction in iron reserves and to satisfy the public fear that the ore might contribute to the restoration of Japanese arms. SCAP hopes that Japan can procure from the Philippines 150,000 tons in 1949 rising to 750,000 tons by 1953.

India

Indian iron ore deposits are among the largest in the world, but only about 8 million tons of reserves are in deposits which are being worked. The local iron and steel industry consumes most of this ore, taking advantage of the proximity of coking coal to the chief ore deposits. Exports are under government control, only limited quantities being alloted to Japan. In any event, Indian transportation difficulties have hindered shipments for export. SCAP hopes that Japan can procure from India 100,000 tons in 1949 rising to 250,000 tons by 1953.

Australia

Australia has working deposits in its south with reserves of about 300 million metric tons. An additional 250 million tons of ore are located in western Australia, which just before the war were being developed by the Japanese. In prewar years, 30 percent of Australia's iron ore production was exported, of which a large percentage went to Japan. SCAP does not plan on Japan being able to procure iron ore from Australia during the next few years.

Indo-China

Indo-China has estimated reserves of 56 million tons (50% Fe). Little ore has been mined in Indo-China mainly because of inaccessibility of the locations.

B. Far East Communist Areas

Manchuria

Manchuria has estimated reserves amounting to 3.8 billions tons of which 146 million tons are over 50% Fe content. The Japanese were forced to use expensive processes to bring the quality of the ore up to the level required for final smelting for use in steel manufacturing.

China

China has estimated reserves of iron ore of 906 million to 1.2 billion metric tons of which 512 to 762 million metric tons are over 50% Fe content. Many of these reserves have not been mined. Current production of iron ore throughout China is low, but with the end of fighting and the restoration of through communications, output may increase. It is doubtful, however, if production (excluding Hainan Island) will reach a level during the next several years to supply China with

a surplus of ore over its modest domestic requirements. However, if the high-grade deposits (150-400 million metric tons) on Hainan Island can be satisfactorily exploited, China will have ore available for export. SCAP hopes that Japan can procure 600,000 tons from China in 1949 rising to 1,350,000 tons by 1953, of which 400,000 tons are anticipated from Hainan Island in 1949 rising to 750,000 tons by 1953.

Northern Korea

Northern Korea has about 250 million metric tons of iron ore of which 200 million metric tons are in the Musan deposit which requires considerable beneficiation. The ore deposits of high iron content are few. (About 10 million tons of iron ore, apparently high grade is located in South Korea but the output will be for local needs).

Far Eastern USSR

While there appear to be iron ore deposits in Sakhalin, little of it is proven. The Nikolaevsk area (on the Pacific, west of Sakhalin) has an estimated 14.2 million tons proven reserves of poor but easily concentrated ore (35.8-44.5% Fe). About 0.6 million tons are estimated to be located in the Olga area, which is north of Vladivostok, on the Pacific.

Japan's prospects for supplying its iron-ore needs from:

A. Far East non-Communist Areas

Adequate reserves of iron ore suitable for Japan's purposes exist in non-Communist areas of the Far East. These include Malaya, the Philippines, India and Australia.

Whether or not Japan can procure these ores, however, is contingent on economic and political factors. First, there is the hostility to Japan engendered by the war. The governments of the Philippines and Australia, in particular, have to move cautiously in all economic relationships with Japan because of hostile public opinion. Second, there is the desire by the Far Eastern countries, the Philippines and India in particular, to build their own iron and steel industries. Even if exportable surpluses are available after domestic needs are satisfied, there is an obvious reluctance to supply the competitive Japanese industry. Third, these countries have plant rehabilitation and transportation difficulties, which make it hard for them either to produce the ore or to move it to the ports. Fourth, shipping is an important problem. The Japanese merchant fleet has been sharply reduced and will expand only slowly because of allied policy and because of the lack of raw materials. If the greater part of the Japanese fleet were devoted to iron ore shipments, there would be adequate tonnage. The need for transporting other commodities, however, would have to be considered in allocating shipping to iron ore. The iron ore exporting countries in the Far East do not have adequate shipping. In any event, if ships other than Japanese are used to handle Japanese requirements the shipping charges would make the cost of the iron ore to Japan excessive. Fifth, political instability within some of the countries, such as Malaya and Indo-China, can be expected to hinder production.

Japan's demand for ore probably will stimulate production in its former sources. If prewar production levels can be attained, and if shipping is available, Japan should be able to procure its iron ore needs from Far Eastern non-Communist countries. The date when that happens, however, depends upon the extent to which the above factors can be resolved.

B. Far Eastern Communist areas

If Japan were cut off from non-Communist areas, it could fill its ore requirements from Manchuria, China and northern Korea. Reserves are available, especially the high grade ores of Hainan Island. Thus in 1942, Japan imported nearly 4,000,000 tons of iron ores from China, mostly from Hainan. Sufficient reserves of high grade ore exist in China, especially in Hainan, to satisfy Japan's requirements for many years.

Some supply could be expected from northern Korea which in 1944 furnished Japan with 610,000 tons of 54 percent concentrate. It is difficult to estimate the availability of the Manchurian or Far Eastern USSR iron ore to Japan. There have been offers by the Soviets of iron ore to Japan within the last two years; their origin appears to be Sakhalin, however, and the extent of iron ore deposits in Sakhalin does not appear substantial.

As with the non-Communist areas, Japan will have political and economic factors to content with. These include (a) the shipping problem (b) ability of the Chinese Communists and northern Koreans to develop their iron ore resources and (c) willingness of these Communists to trade with Japan. If these problems can be solved, Japan probably can procure its iron ore requirements from Communist-areas of the Far East. On such assumption, and in view of the experience during World War II, there appears little reason to doubt that if Japan becomes Communist-oriented, the US could not deny Japan its iron ore needs.

US Security Aspects

Because of Japan's current inability to procure sufficient iron ore from non-Communist areas of the Far East, the US, in its efforts to rehabilitate Japan's

iron and steel industry, is relying to some extent on sources that are Communist-oriented. Assuming the actuality of anticipated availability to Japan of iron ore from non-Communist areas of the Far East, availability of iron ore will not be a limiting factor in moderate recovery of Japan's steel industry. (SCAP plans contemplate consumption in 1953 of 1 million metric tons of domestic ore and 2.5 million metric tons from non-Communist areas of the Far East. However, this is 1.3 million metric tons of ore less than will be required according to SCAP's plans for 1953; SCAP hopes that this balance will be available from China, especially Hainan.) As Japan's requirements exceed the above estimated availability from non-Communist Far Eastern areas, Japan tends to become vulnerable to less economic sources (as US or Canada) or to economic pressures that Communist China may desire to exert in order to exploit Japan's need for ore. (To the extent that the Communists are dependent in turn on Japan for trade, that economic-political pressure is offset.)

As the Chinese Communists solidify their control of China and as Japan's recovery creates requirement and ability to absorb above 3.5 million metric tons, Japan's susceptibility to economic orientation toward the USSR orbit encompassing China will increase. Neutralization of this susceptibility could result from a) increasing the capability and willingness of non-Communist areas of the Far East to meet Japan's requirements (notably the Philippines, India, Malaya and Australia) and b) exploiting to the fullest extent China's dependence on manufactured goods that can be supplied by Japan.

As the iron ore production and distribution facilities of non-Communist Far Eastern areas are developed, Japan's dependence on the Communist areas can be diminished accordingly up to a point of complete elimination. To the extent that the

US successfully uses its good offices to aid Japan obtain iron ore from non-Communist areas, Japanese US-orientation can be furthered. Contrari-wise, to the extent that Japan cannot procure its iron ore needs from the non-Communist areas and hence has to rely on Communist producers, the USSR can tend to penetrate Japan, either through its own devices, through those of its satellites, or through JCP propaganda. Moreover, from a view of Japan's capacity in steel production, orientation of Japan with the Soviet sphere of influence would add considerable benefit with no appreciable burden of outside dependence on ore to the USSR's capability for developing a Far Eastern war-making complex.